Second Generation Occupational Interest Profiles for the O*NET System: Summary

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The Occupational Information Network (O*NET) is a comprehensive system for collecting, organizing, describing, and disseminating data on occupational characteristics and worker attributes developed by the U.S. Department of Labor (USDOL). The O*NET System was developed as the replacement for the Dictionary of Occupational Titles (U.S. Department of Labor, 1991). By providing information online in a searchable database, the O*NET Program allows for easier access to data on occupations at different levels of detail, thereby facilitating its utility for a variety of consumers. Businesses and human resources professionals can use O*NET products and tools for a variety of purposes, including the development of job descriptions, expanding the pool of quality candidates for open positions, aligning organizational development with workplace needs, and refining recruitment and training goals. Job seekers can use O*NET information to identify jobs that fit with their interests, skills, and experience, explore growth career profiles using the latest available labor market data, make effective career-related decisions to maximize earning potential and job satisfaction and also develop their understanding of what it takes to be successful in their field and in related occupations. The O*NET Program also provides an invaluable resource for researchers who study issues related to the U.S. workplace and labor market. The O*NET System includes the Content Model, a skills-based structure that serves as the framework for organizing the information describing the world of work presented within O*NET products and tools (see Peterson, Mumford, Borman, Jeanneret, & Fleishman, 1999). As part of the content model, Occupational Interest Profiles (OIPs) were developed based on Holland's (1997) interest-based classification of work environments. The OIPs provide an important link between the O*NET System and interest-based assessments that are often used in career counseling and other applied settings.

In the time since the initial development of OIPs for the O*NET 98 Analyst Database there have been a number of important changes made to the database structure and content. The initial classification system for occupations based on the Occupational Employment Statistics (OES) classification was converted to the new Standard Occupational Classification (SOC) system in version 3.0 of the database. Version 10.0 of the database was revised to reflect the O*NET-SOC 2006 Taxonomy (see Updating the O*NET-SOC Taxonomy). As part of these revisions, crosswalks were developed between the initial occupations that were rated on the RIASEC work environment measures and the current occupations. Although the crosswalk process is straightforward for many occupations, in some cases the need emerged for new RIASEC ratings. The identification of new occupations in areas such as information technology, for example, when revising the SOC system also created a need for new RIASEC ratings. Additionally, there have been nine revisions of the O*NET database (versions 5.0 through 13.0, consecutively) in which data on occupations from the initial Analyst Database has been replaced with data obtained primarily from job incumbents. Changes to the O*NET database across these updates includes the addition of Task Statement ratings, Work Context, Work Styles, Training and Work Experience, and Education data for 800+ occupations; updated Abilities, Work Activities, Knowledge, Skills, Job Zones, and Work Context data for 800+ occupations; the identification of Emerging Tasks for over 300 occupations; the addition of Detailed Work Activities for 800+ occupations; and the addition of Tools and Technology ratings for over 300 occupations. The issue of having O*NET-SOC occupations without RIASEC ratings from the initial Analysts Database due to changes in the occupational classification structure, combined with the

substantial improvements in data available on occupations through the revisions of the O*NET database, led to the decision to develop new RIASEC-based OIP data for all occupations in the O*NET database. Finally, the O*NET Program is identifying New and Emerging (N & E) Occupations related to High Growth Industries [see New and Emerging (N & E) Occupations Methodology Development] The approximately 100 identified N & E occupations also will need OIP information.

The Occupational Interest Profiles (OIPs) were developed using analyst ratings based on the most recent occupational data in the database. Each OIP consists of six numerical scores in invariant order (R-I-A-S-E-C) indicating how descriptive and characteristic the occupation is for each of the work environments. The methods used for developing the current revision of the OIPs were based on the analyst rating procedure developed for the initial OIPs for O*NET 98 (Rounds, Smith, Hubert, Lewis, & Rivkin, 1999), while taking advantage of the new data available in the O*NET database. Two groups, each group having three trained raters, made judgments on 459 and 450 occupations, respectively. The raters judged the appropriateness of each Holland category for each occupation based on O*NET data for the occupation. The O*NET information for an occupation included Occupation Title, Occupational Descriptions, Core Tasks, Knowledge, and Generalized Work Activities. The mean rating across the three judges was then obtained for each of the six Holland categories for each occupation. We also applied recommends cutoff values to the OIPs for the development of high point codes for an occupation (see Rounds et al., 1999). The cutoff value chosen for profile development in the present report resulted in one- to three-letter RIASEC profiles.

Due to the fact that the methods used for generating the OIPs is dependent on the accuracy of the raters, the degree to which the three raters agreed with each other was very important. To assess the degree of interrater agreement, rater-by-rater cross-classification tables were constructed using the obtained raw ratings. For each pair of raters, a separate cross-classification table was constructed for each of the six Holland categories. Goodman-Kruskal's Gamma (Goodman & Kruskal, 1954) was computed to assess inter-rater agreement. The overall mean value for Gamma was .76, indicating a high degree of reliability for the ratings of the six occupational analysts. Another important step in the evaluation of the OIPs was to examine the structural validity evidence for the OIP ratings. It was important to assess the degree to which the obtained results were in accordance with the Holland's theoretical model. To do this, several geometric models were fit to the occupational data, and the overall pattern of results was consistent with Holland's model.

The OIPs are unique in vocational assessment and classification research, being the first effort to create full, numerical profiles, covering all six RIASEC environments. These profiles were developed using a straightforward and easily understood theory-based and empirically supported model of the world of work. The OIPs offer the advantage of numerically coded profiles and allow the researcher or practitioner to select the degree of profile specificity. That is, one- to six-category profiles can easily be obtained by specifying a particular cutoff level for the numerical profile. These high-point profiles can be used by counselors and clients to determine which interests are truly descriptive of an occupation's environment. The OIPs for the occupations can be matched with most U.S. vocational interest scales, yielding a direct link to O*NET information for clients, counselors, and researchers.

References

Goodman, L.A. & Kruskal, W.H. (1954). Measures of association for cross classifications. *Journal of the American Statistical Association, 49*, 732-764.

Holland, J. L. (1997). *Making of vocational choices: A theory of vocational personalities and work environments*. (3rd ed.). Odessa, FL: Psychological Assessment Resources, Inc.

National Center for O*NET Development (2006). *New and emerging (N&E) occupations methodology development report.* http://www.onetcenter.org/reports/NewEmerging.html

National Center for O*NET Development (2006). *Updating the O*NET-SOC taxonomy: Summary and implementation.* http://www.onetcenter.org/reports/UpdatingTaxonomy.html

Peterson, N., Mumford, M., Borman, W., Jeanneret, P., & Fleishman, E. (1999). *An occupational information system for the 21st century: The development of O*NET*. Washington, DC: American Psychological Association.

Rounds, J., Smith, T., Hubert, L., Lewis, P., & Rivkin, D. (1999). *Development of Occupational Interest Profiles (OIPs) for the O*NET part 1: Report.* Raleigh, NC: National Center for O*NET Development. http://www.onetcenter.org/reports/OIP.html

U.S. Department of Labor. (1991). *Dictionary of occupational titles* (Rev. 4th ed.).Washington, DC: U.S. Government Printing Office.